

THE EOCENE FOSSIL FLY EOPHLEBOMYIA.

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In 1922 a remarkable fossil fly, evidently representing an undescribed genus, was found in the Green River Eocene shales near De Beque, Colorado. I described it in Proc. U. S. National Museum, Vol. 64, Art. 13, p. 4 (1924) as *Eophlebomyia claripennis*, with an enlarged figure from a photograph by Dr. R. S. Bassler. With hesitation, I placed it in the Trypetidæ, remarking: "I at first thought to refer it to the Anthomyiidæ, but it appears to be acalyptrate, and the venation agrees better with Trypetidæ. In certain respects, it agrees with what we should expect to find in an ancestor of the modern Trypetidæ." Some time after, I found I had a second specimen from the same region, and this I sent to the British Museum. I was particularly anxious for Major E. E. Austen to examine it, because the fly, as I had stated in my description, resembled *Glossina* in the course of the fourth longitudinal vein. In his Handbook of the Tsetse-flies, Austen called attention to this character in *Glossina* as something absolutely unique.

Major Austen very kindly examined the fossil at once, and wrote at length concerning it. I urged him to publish an article, but he asked me to do whatever seemed necessary, giving full permission to quote his opinions. I meant to wait until again publishing on Eocene insects, but as such publication may not occur for a long while, it seems best to offer the present discussion. Major Austen wrote (Dec. 13, 1924):

"After making as careful an examination of the specimen as I can, I am inclined to doubt whether the species belongs to the Acalyptratae at all. I certainly can't distinguish any squamæ, but that doesn't prove the absence of these structures. In spite of the Trypetid-like character of the auxiliary vein, the extreme shortness of the anterior transverse vein, coupled with the apparent absence of bristles on the extensor surface of the tibiæ, in my opinion renders the inclusion of the species in the family Trypetidæ impossible. The short anterior transverse vein is

characteristic of the Calyptrate, not of the Acalyptrate Muscoidea; but although the open first posterior cell would seem to suggest that the species should be referred to the Anthomyiidae, I don't think that strictly speaking it can belong to this family, owing to its smooth tibiae. On the other hand, the *Glossina*-like course of the fourth longitudinal vein, to which you draw attention in your description of the genus *Eophlebomyia*, is very remarkable, and may be significant. Unfortunately, since nothing can be seen of the proboscis or arista, it is impossible to determine whether or not the fly should be regarded as a blood-sucker. Be this as it may, I am, for the moment at any rate, inclined to consider *Eophlebomyia* as possibly representing an annectant form between the Anthomyiidae and the blood-sucking Muscidae, as represented by *Glossina*."

With regard to the tibiae, in the original type, now in the U. S. National Museum, it was possible to see that there were no preapical bristles, but were minute dark hairs on outer side arranged in two lines.

In a later letter, Major Austen discusses the question whether *Glossina* may have originated in America, and spread later to Africa. We have of course, several species of *Glossina* in the Colorado (Florissant) Miocene; and it is at least conceivable that the Eocene *Eophlebomyia*, from the same general region, may be ancestral to them. In this case, it appears to follow that the so-called Muscidae are polyphyletic, the *Glossina* group having arisen independently from the others. *Eophlebomyia* is best placed in a separate family, *Eophlebomyiidae*.

It is a pity that more collecting is not done in the Eocene shales of the Roan mountains and adjacent ranges. The many excavations in the oil shales have resulted in throwing out and exposing large quantities of rock, which should be searched for fossil insects and plants. In a few years weathering will have decayed and spoiled these precious materials. The cost of an expedition, as such things go, would be very small. The best time would be in the fall. The discovery of such a fossil as *Eophlebomyia* is certainly worth the time, trouble and expense.